VTX Standalone Software

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I've made a package to read and store monte carlo tracks, with `simDST.root` or `ancsvx.root` as input. Reading from the simulation DST, one can store the groups of clusters belonging to a MC track.

The code is at
`/phenix/subsys/vtx/adion/offline/analysis/play/SvxStandAlone_MC`.
The class stored is `SvxMcTracks`. The header file is self-explanatory.

`ancsvx.root` has more information than `simDST.root`. To store the clusters along with the extra information from `ancsvx.root`, run the following:

```
gSystem->Load("libSvxStandAlone_MC");
AncReader *anc = new AncReader();
anc->run("ancsvx.root", "svx_mc_anc.root", nevents);
anc->run2("simDST.root", "svx_mc.root", nevents);
```

Then modify/run the macro called `fill_svx_mc.C` in
`/phenix/hl/data65/phnxhl01/adion/VTX/wrk`

Then one can analyze tracks using the clusters, and when the standalone tracking is completed, one can migrate the code over easily.

Status

The tracking is getting close to complete. Right now it finds only primary tracks (and photon conversions).

The tracking can be run by loading the `SubsysReco` called `SvxStandAloneReco`

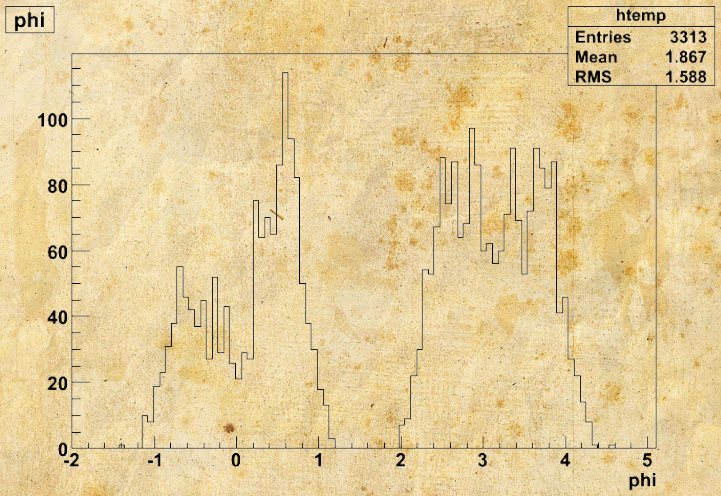
This week I plan to add secondary track finding

John Lajoie is working on the Kalman filter, and I have also been working on associating VTX tracks with DC tracks.

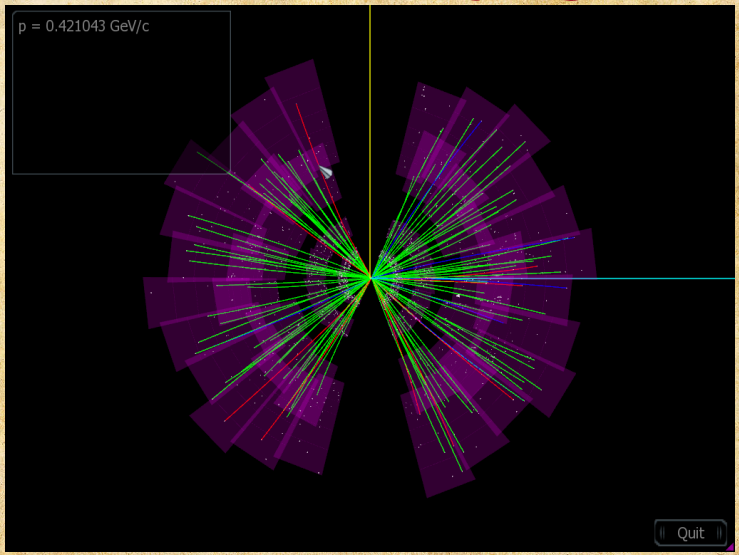
Human Built-In Reconstruction Software

To prepare for the blind analysis, I've been rewriting the VTX standalone tracking. There are some problems to be worked out:

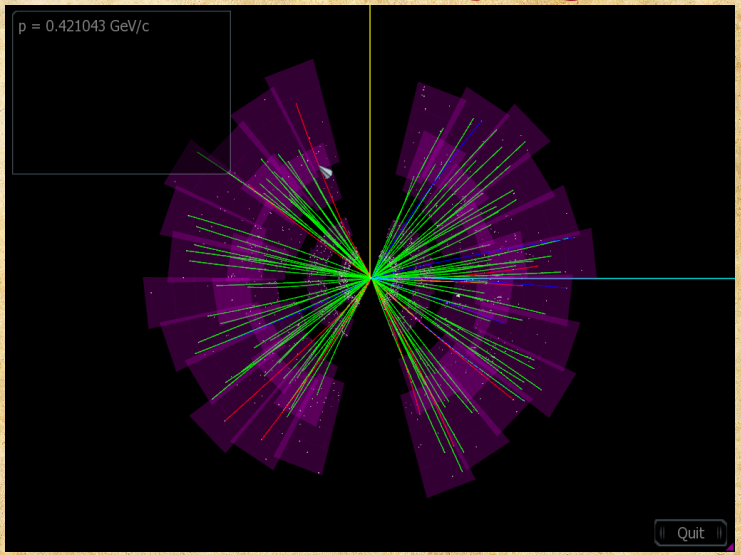
John has pointed out a derth of tracks in a particular ϕ range...
Ultimately I want to do multi-particle reconstruction of off-vertex decays. It is difficult to debug such an algorithm without seeing how close the reconstructed tracks come to intersecting each other.
To facilitate debugging, I wrote an event display. I will show a few screen-shots of the event display showing the standalone tracking in this presentation.



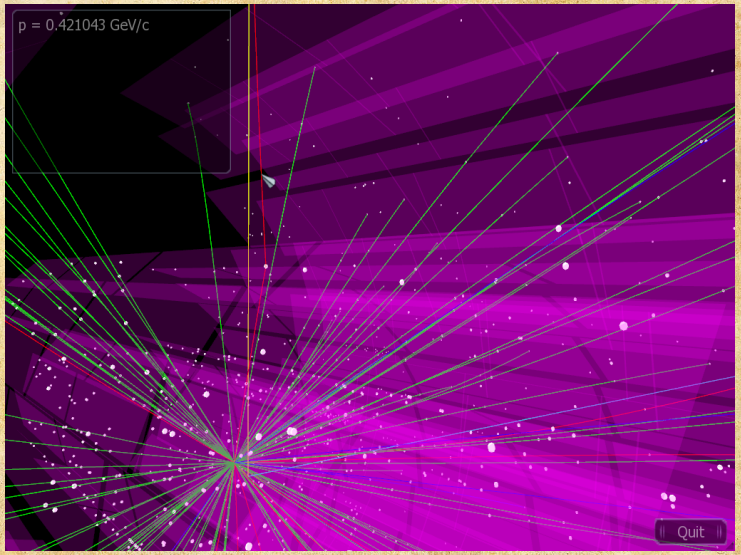
John reports an odd ϕ distribution of tracks from the standalone tracking. This could be coming from a problem with the cluster positions which I noticed a week or so ago.



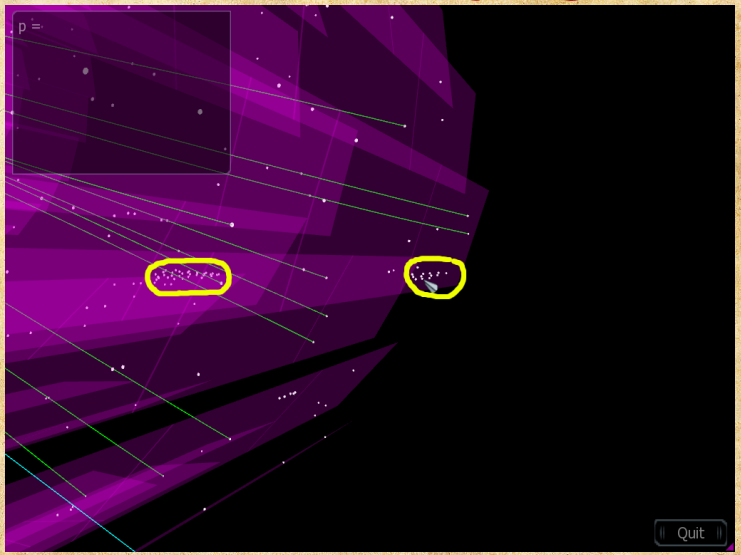
However, I don't see such a problem in a sample of HIJING events. I will run lots of statistics to cross check.



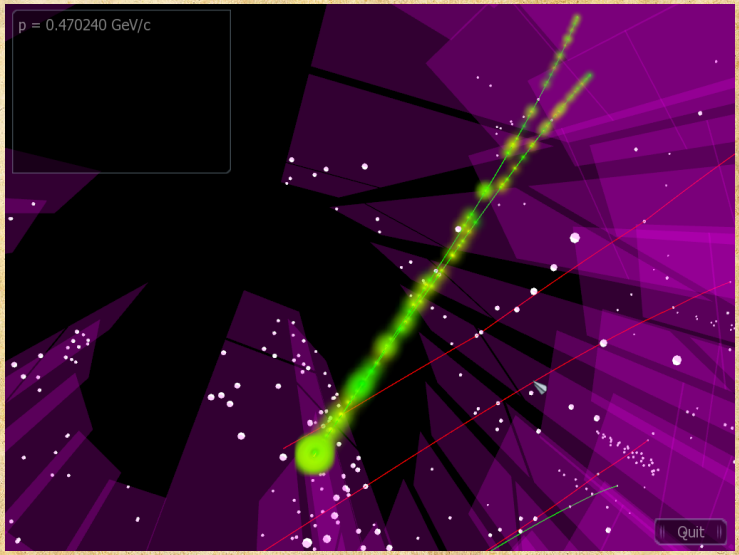
Green: properly reconstructed track. Red: MC track not reconstructed. Blue: ghost track



Note the large scatter in the 3rd layer. This track won't be reconstructed.



In high multiplicity events, curlers and noise become a nuisance.



Yay, I can reconstruct photon conversions in the beampipe and inner layer!